

acid sequence that is 98% identical with an amino acid sequence encoded by barley chitinase cDNA having nucleotide sequence SEQ ID No: 6.

14. (Twice Amended) A winter wheat chitinase cDNA according to claim 13, characterized in that said cDNA has nucleotide sequence that encodes an amino acid sequence listed as SEQ. ID No. 1 in Fig. 1.

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15. (Twice Amended) A winter wheat chitinase cDNA characterized in that said cDNA encodes a protein with chitinase activity at low temperatures of 0°C or below, and further characterized in that said cDNA comprise 972 nucleotides which encode an amino acid sequence comprising 323 amino acids and encodes an amino acid sequence that is 68% identical with an amino acid sequence encoded by rye chitinase cDNA having nucleotide SEQ ID No: 7.

17. (Twice Amended) A winter wheat chitinase cDNA characterized in that said cDNA encodes a protein with chitinase activity at low temperatures of 0°C or below, and further characterized in that said cDNA comprises 960 nucleotides which encode an amino acid sequence comprising 319 amino acids and encodes an amino acid sequence that is 95% identical with an amino acid sequence encoded by spring wheat chitinase cDNA having nucleotide SEQ ID No: 8.

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18. (Twice Amended) A winter wheat chitinase cDNA according to claim 17, characterized in that said cDNA has a nucleotide sequence that encodes an amino acid sequence listed as SEQ. ID. No. 3 in Fig. 3.

19. (Twice Amended) A method of isolating a [the] winter wheat chitinase having a nucleotide sequence that encodes an amino acid sequence listed as SEQ. ID. No. 1 in Fig. 1, a winter wheat chitinase cDNA having a nucleotide sequence

corresponding to an amino acid sequence listed as SEQ. ID. No. 2 in Fig. 2, or a winter wheat chitinase cDNA having a nucleotide sequence corresponding to an amino acid sequence listed as SEQ. ID. No. 3 in Fig. 3, said method comprising the steps of:

extracting mRNA from winter wheat variety that has undergone a sufficient hardening process:

preparing cDNA and a cDNA library based on said mRNA;

analyzing nucleotide sequences of a number of plant-derived chitinase cDNAs which have all been published by EMBL/Genebank/DDBJDNA Databank;

designing a pair of chitinase cDNA-specific degenerated primers with reference to highly conserved nucleotide sequence portions of the plant-derived chitinase cDNAs;

G² conducting PCR (polymerase chain reaction) using a pair of chitinase cDNA-specific degenerated primers and using said cDNA as a template, thereby amplifying fragments of chitinase cDNAs and obtaining amplified DNA fragments; and

using said amplified DNA fragments as probes for screening said cDNA library by a hybridization assay, to isolate recombinant plaques containing full length cDNA.

23. (Amended) A plant transformed with a cDNA according to claim 14.

G³ 24. (Amended) The winter wheat chitinase cDNA of claim 14, wherein the cDNA has been synthesized from mRNA extracted from winter wheat.
